Fauna Sumatrensis.

(Bijdrage Nr. 65).

COCCIDAE.

By

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(With 10 figures).

The material which forms the subject of the following notes was collected by Mr. EDWARD JACOBSON in Sumatra during the years 1923 to 1927 and submitted to me for identification. The publication of the results has been delayed, firstly, by preasure of other work and, later, by a serious illness. The types will remain in the collection of the author and cotypes (where there are such) will be deposited at the British Museum of Natural History.

Though the collection contains but a few species (23 in all) it is interesting from the fact that barely half-a-dozen species of *Coccidae* had been recorded from this island.

From its proximity to the neighboring island of Java, it might be expected that Sumatra would possess a Coccid fauna very similar to that of its nearest neighbour. But an analysis of the species represented in this collection shows that nine of them are new and are described below for the first time, six are of almost cosmopolitan distribution, another six have their head quarters in the Indian Region, one species (*Lepidosaphes bambusicola*) was originally described from Brazil, while only a single peculiar Javan species (*Odonaspis sacharicaulis*) occured in the Sumatran collection, which contained the following twenty three species:

1. *Drosicha sumatrensis* sp. nov. Adult ♂♂. Presumably caught on the wing.
2. *Icerya nuda* sp. nov. On *Gigantochloa aspera*. A single ♀, containing well developed embryos.

3. *Pseudococcus citri* RISSO. On *Solanum grandiflorum*. This insect has a world-wide distribution, on various cultivated plants.
4. *Pseudococcus longispinus* TARG. "On numerous garden plants, tended by ants — *Plagiolepis longipes*". This is another species that has been widely distributed, through the interchange of cultivated plants.
5. *Pseudococcus jacobsoni* sp. nov. "On *Ficus retusa*; tended by *Dolichoderus bituberculatus*".
6. *Antonina indica* GREEN. On the nodes of two grasses — *Paspalum conjugatum* and *Hoplismenus compositus*. The species has a range extending through India, Ceylon, the Hawaiian Islands and Australia. A form of the same species — *A. indica-panici* HALL — occurs in Egypt.
7. *Antonina zonata* GREEN. On a species of Bamboo; tended by *Dolichoderus bituberculatus*. Hitherto known only from Ceylon.
8. *Anomalococcus multipori* MOR. In the carton nests of *Dolichoderus carbonarius-latisquama*. Originally described from Singapore. The same (or a closely allied) species has been found in Formosa.
9. *Tachardia rangoonensis* CHAMB. On *Casuarina* sp. Originally described from Rangoon.
10. *Lecanium (Saissetia) hemisphaericum* TARG. On *Livistonia* and *Citrus*. Of world-wide distribution.
11. *Lecanium (Coccus) longulum* DOUGL. On *Ficus retusa*. Very generally distributed throughout the Tropics.
12. *Lecanium (Coccus) discrepans* GREEN. On *Mangifera odorata*. Hitherto recorded from the Indian and Malayan Regions only.
13. *Lecanium (Saissetia) crassum* sp. nov. On *Broussonetia papyrifera*. Though now described for the first time, the same insect was found in India some years ago.
14. *Lecanium bambusicola* sp. nov. On stems of *Bambusa nana*.
15. *Ctenochiton formicophilus* sp. nov. In the carton nests of *Dolichoderus carbonarius-latisquama*, in association with *Anomalococcus multipori* and
16. *Ctenochiton inclusus* sp. nov.
17. *Pulvinaria psidii* MASK. On *Citrus* sp. Widely distributed

throughout the Oriental and Australian Regions, and doubtfully distinct from *Pulv. ficus* HEMP., from Brazil.

18. *Ceroplastes actiniformis* GREEN. On *Anona montana*. Previously recorded from India, Ceylon, Java, the Italian Somaliland and the Canary Islands.
19. *Vinsonia magnifica* sp. nov. On *Mangifera odorata* and *Eugenia malaccensis*.
20. *Aspidicotus palmae* MORG. & CKLL. On *Mangifera odorata*. Originally described from Jamaica, W. I. Subsequently recorded from British Guiana, Fiji, Ceylon and Java.
21. *Odonaspis saccharicaulis* ZEHNT. On the rhizomes of grasses. Originally described from Java.
22. *Aulacaspis sumatrensis* sp. nov. On *Mangifera odorata*.
23. *Lepidosaphes bambusicola* CKLL. On *Bambusa nana*. Originally described from Brazil. Recently recorded from Algiers.

I am indebted to Mr. F. LAING, of the British Museum (Nat. Hist.) for the following list of *Coccidae* previously recorded from Sumatra:

Monophlebus (Drosicha) dubius (FAB.).

Monophlebus (Drosicha) fabricii WESTW. (Note. Mrs. FERNALD, in her "Catalogue" sinks *fabricii* as a synonym of *dubius*. Signoret, on the other hand, regardless of the the dates of publication, places *dubius* as a synonym of *fabricii*. WESTWOOD, however, gives good reasons for regarding his species as distinct).

Ferrisia virgata (CKLL.). On Coffee, etc.

Lecanium (Coccus) hesperidum L. On Cinchona, etc.

Lecanium (Coccus) viride GREEN. On Coffee, etc.

Chionaspis tegalensis ZEHNT. On Sugar Cane.

Chrysomphalus calami MALEN. On Calamus spectabilis.

Descriptions of new species.

Drosicha sumatrensis nov. (fig. 1).

Adult ♀. Very similar and closely allied. to *D. townsendi* CKLL., from which it differs — chiefly — in the much more slender antennal joints. The abdomen bears 4 long fleshy tassels, as in *townsendi*. It has a wing expanse of

12 mm., and a total body length (exclusive of the abdominal tassels) of 4.5 mm. The females of this species are still unknown.

As noted above, two other species (*dubius* and *fabricii*) of *Drosicha* have been recorded from Sumatra. WESTWOOD does

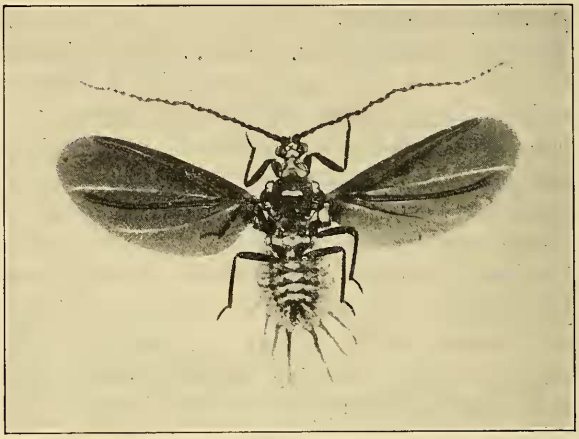

Fig. 1. *Drosicha sumatrensis*, ♂, × about 6.

not give the dimensions of his species, but he states that it has three pairs of abdominal appendages, thus differing from *sumatrensis* which has four pairs. He also remarks that *dubius* differs from his species in having the appendages short.

Icerya (Crypticerya) nuda nov. (fig. 2).

Adult ♀. Body large, narrowed anteriorly, widening posteriorly: strongly convex above: segments well defined by transverse furrows and ridges. Length 13 mm.; greatest breadth 11 mm. Colour orange-red. Secretionary covering not observed, the single example having been preserved in alcohol; but the absence of dermal setae suggests that the body is naked, or — at least — devoid of waxy appendages. Derm slightly granular; with numerous translucent vittae and small round areoles which are more crowded around the small anal aperture; entirely without setae or

pile. Venter without a pore band. Antennae and limbs relatively small; not deeply coloured. Antenna (*a*) with 11 joints, sparsely setose. Legs (*b*) approximately equal in

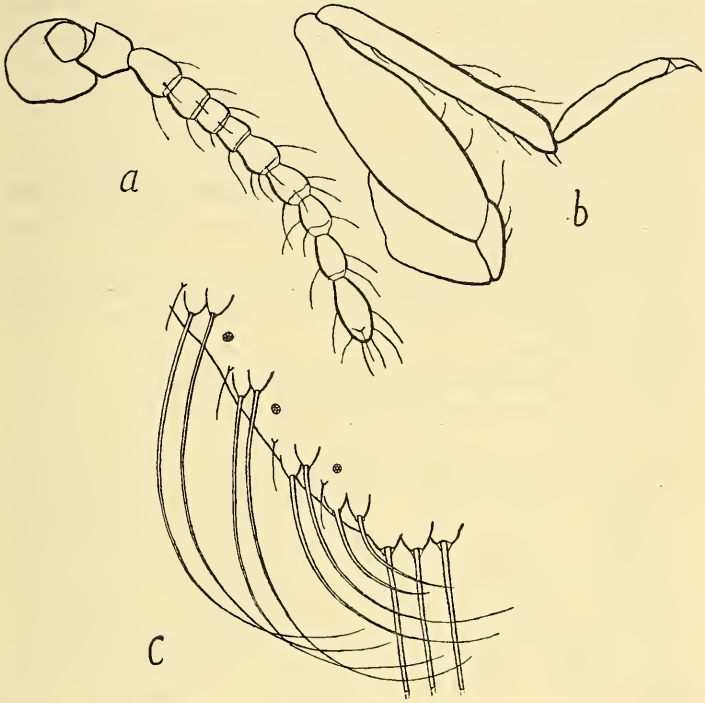

Fig. 2. *Icerya nuda.*
a Antenna, × 80, *b* Leg, × 80, *c* Embyonic larva: posterior margin, × 220.

size; slender; sparsely and weakly setose; tibia almost equal to femur and trochanter together: tarsus equal to or slightly exceeding half the length of the tibia; claw rather slender, acutely pointed.

The insect is apparently ovoviviparous, the body of the mature female containing advanced embryos, and does not construct any ovisac.

Embryonic larvae, extracted from the body of the parent insect. Eyes prominent, in the form of densely chitinous truncate cones. Dermal setae (*c*) relatively long and slender,

tapering to a fine point; in longitudinal series — a double median, single dorso-lateral and double marginal series; the dorsal series shorter and straight, the marginal series longer and curved, each seta springing from a swollen bulbous base; with six greatly elongated setae at the posterior extremity. Dermal pores small, each with a central aperture surrounded by six loculi. Length (excluding setae) slightly exceeding 1 mm.

On *Gigantochloa aspera*. Described from a single imperfect example in alcohol. Readily distinguishable from allied species by the relatively small limbs and the complete absence of dermal pile.

The subgenus *Crypticerya* CKLL. was erected for the reception of species in which no ovisac is developed by the mature females.

Pseudococcus jacobsoni nov. (fig. 3).

Adult ♀. Form very broadly ovate, approximately circular.

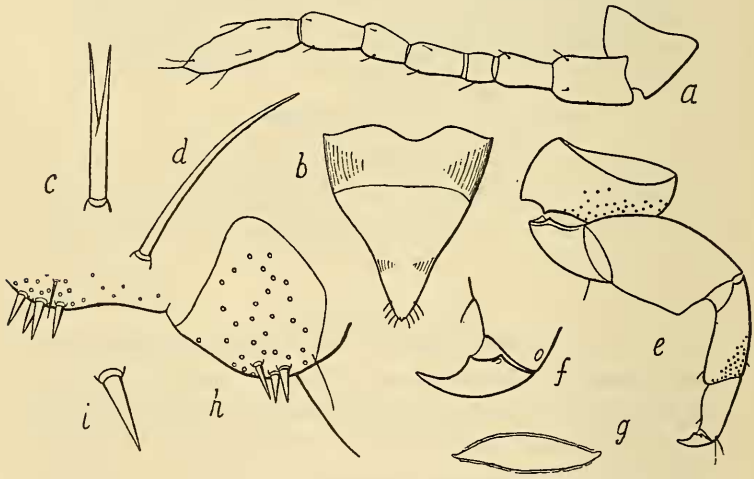

Fig. 3. *Pseudococcus jacobsoni.*
a Antenna, × 220, *b* Labium, × 220, *c*, *d* Macrochaetae from dorsum of abdomen, × 450, *e* 3rd Leg, × 130, *f* Claw, × 450, *g* meso-ventral ostiole, × 220, *h* Caudal + penultimate cerarii, × 220, *i* Cerarial spine, × 450.

Dimensions 2.25 × 2 mm. Paranal lobes (*h*) short, markedly but not heavily chitinized. Margins of abdominal segments

not produced. Antennae (*a*) 8-jointed; 8th longest, 4th markedly shortest; average formula 8, 2, 7, (3 5), 6, 4; setae small and inconspicuous Eyes prominent. Labium (*b*) longer than broad, obscurely 3-jointed, rather abruptly narrowed beyond the middle and tapering to a point. Limbs robust; tarsus more than half length of tibia, tibia and tarsus together conspicuously shorter than femur plus trochanter. Third leg (*e*) with numerous translucent pores on the outer half of the coxa and on the outer area of the distal half of the tibia. Claw (*f*) robust, with a dentiform prejection near its base. Digitules simple. Cerarii well defined; a complete marginal series of 18 on each side, the ultimate pair (*h*) with a large, sharply defined, chitinous plate; the penultimate pair diffusely chitinized. Cerarial spines (*i*) robust, acute, of approximately the same size throughout; each cerarius with from 3 (rarely 2) to 5 spines; where the larger numbers occur, one or more of the spines are usually more slender. Cerarial pores loosely clustered. Dermal pores numerous but very small and inconspicuous. Without noticeable discoid or tubular pores. Dorsal ostioles sharply defined. With a rather inconspicuous, transversely elongate, mesoventral ostiole (*g*). Anal ring with 6 slender setae. Caudal setae slender, approximately twice the length of the anal-ring setae. Body setae small and inconspicuous, except a series of five pairs of (usually reversed) stout macrochaetae (*d*) on the mesodorsum of the abdomen. In a single example (*c*) one of these macrochaetae is furcate.

On *Ficus retusa*. Attended by ants — *Dolichoderus bituberculatus*. Allied to *Pseudococcus hispidus* MORRISON, from which it differs in the smaller number of macrochaetae.

Lecanium bambusicola nov. (fig. 4).

Mature ♀ (e, f, j) ovate, highly convex, the margin very slightly out-turned, the anal cleft fused. Colour varying from greenish ochreous to deep castaneous or black; at first (*e*) with two concentric series of large, irregularly circular or subquadrate, blackish spots, with the submarginal area deeply nigro-maculate; later (*j*) with the spots and maculate border becoming confluent, leaving a medio-longi-

tudinal pale fascia; finally, with the whole area deeply coloured and densely chitinous. Early adult ♀ fulvous; flattish, with a more or less distinct medio-longitudinal

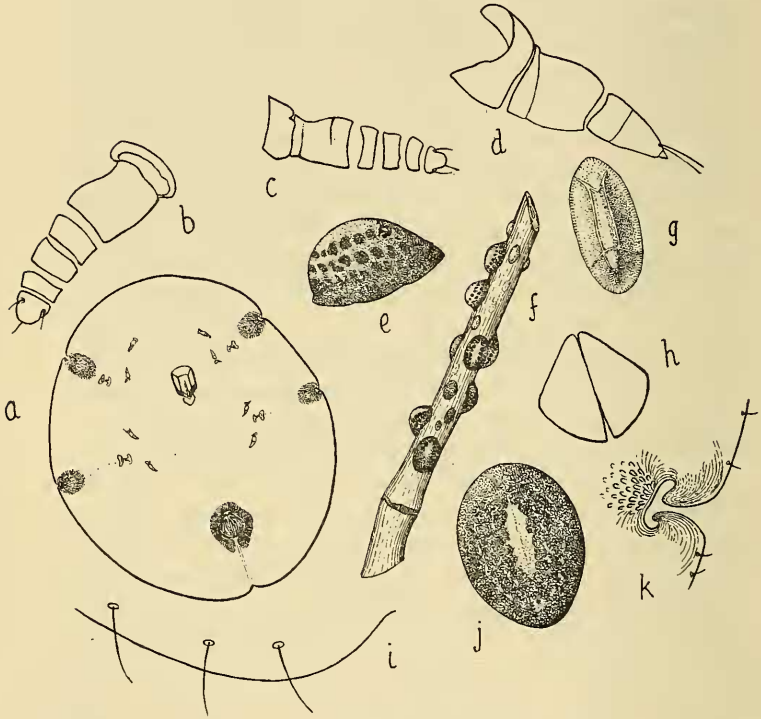

Fig. 4. *Lecanium bambusicola.*
a Early adult ♀, opt. sect., × 18, *b*, *c* Antenna, × 220, *d* 3rd Leg, × 220, *e* Adult ♀, side view, × 5, *f* Insects, on twig of bamboo, nat. size, *g* Male puparium, × 10, *h* Adult ♀, valves of anal operculum, × 80, *i* Marginal setae, × 450, *j* Adult ♀, dorsal view, × 5, *k* Stigmatic cleft, × 130.

carina; the derm (after preparation) membranous (*a*), except on sharply circumscribed areas surrounding the anal operculum and the four stigmatic clefts where the derm is heavily chitinized. Antennae and limbs small and more or less vestigial. Antenna (*b*, *c*) 6-jointed; the elongate 2nd joint sometimes showing indications of partial subdivision; the

apical joint with a deep fovea on each side in each of which is seated a strong seta, with a third seta at the apex ; remaining joints without setae. Legs (*d*) very small ; femur approximately as long as it is broad ; tibia broader than long ; tarsus longer than the tibia ; claw minute, conical. Stigmatic clefts (*k*) relatively deep and inwardly transversely dilated ; without stigmatic spines ; surrounded by a heavily chitinized area in which there are many impressed pores. Marginal setae (*i*) simple, trichiform. Valves of anal operculum (*h*) of the form shown in the figure ; surrounded by a more densely chitinized zone. Dermal cells small, subcircular, not very conspicuous. Dimensions of fully mature female varying considerably ; length 3 to 5.5 mm., breadth 2.5 to 5 mm.

♂ puparium (*g*) colourless, translucent, with a frosted surface ; divided into the usual medial and lateral plates. Length 2 mm., breadth 1 mm.

Crowded on stems and branches of *Bambusa nana* ; Fort de Kock.

Associated with and destroying the *Lecanium* were large growths of an entomophagous fungus, which has been determined by Mr. T. PETCH as *Hypocrella schizostachyi* SID.

Lecanium (Saissetia) crassum nov. (fig. 5).

Allied to and closely resembling *L nigrum* NIETN. ; but with a very much thicker and denser derm. The dermal cells (see fig. 5) themselves very densely chitinized, each

Fig. 5. *Lecanium crassum.* Dermal cells, × 220.

with a translucent ovate pore in the center. Antennae and limbs as in *nigrum.* Colour very dark brown to black. Surface dull, flecked with small colourless irregularly polygonal

waxy plates which — on the marginal area are larger and of more regular form. Anal operculum weakly chitinized, appearing as a pallid spot in contrast to the dark surrounding derm. Body broadly oval, narrower in front; dorsum highly convex, with a small depressed sulca on the antero-median area. Length 4 to 4.5 mm., width 3.5 mm.

On *Broussonetia papyrifera*; attended by ants — *Dolichoderus bituberculatus*. Also received from India, on *Ficus religiosa* and *Psidium guyava*. The Indian examples are slightly smaller, ranging from 3 to 3.5 in length.

Ctenochiton formicophilus nov. (fig. 6).

Adult ♀ (*a*) broadly ovate, flattish, with indistinct median and sublateral carinae: dorsum with a translucent, brittle,

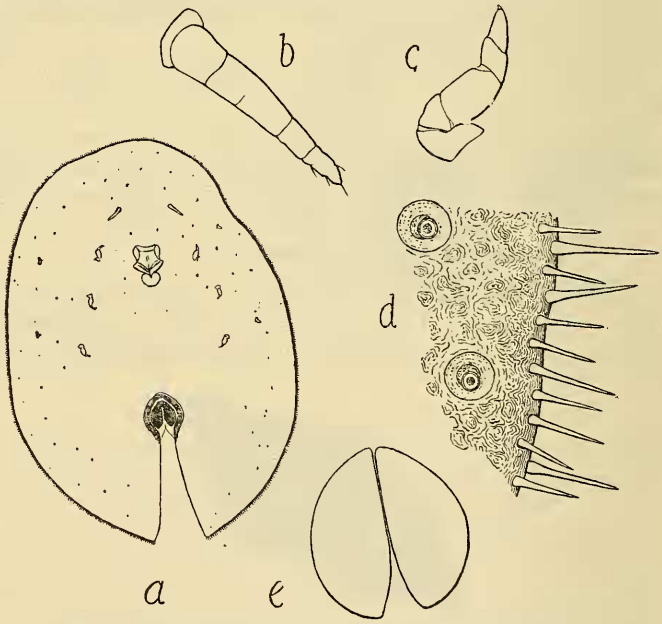

Fig. 6. *Ctenochiton formicophilus*.
a Adult ♀, opt. sect., × 30, *b* Antenna, × 220, *c* Anterior leg, × 220, *d* Margin of body, × 450, *e* Anal operculum × 130.

waxy covering, which is very easily broken and detached. Antennae and limbs very small and weakly developed.

Antenna (*b*) apparently with 5 complete joints only, of which the 3rd is the longest and has an incomplete transverse division. Legs (*c*) of approximately equal size: shorter than the antennae, but relatively robust: tibia plus tarsus shorter than femur plus trochanter. Anal operculum (*e*) surrounded by a densely chitinous zone; the valves together approximately circular, the margins forming an unbroken curve. Anal cleft in the living insect fused, but becoming ruptured under compression. Margin of body (*d*) with a crowded fringe of largish acicular spines, each spine with a swollen base without noticeable stigmatic clefts or differentiated stigmatic spines. Derm with numerous small, irregularly ovate and circular cells distributed over the median area of the dorsum; the sublateral area irregularly rugulose and with some large and conspicuous circular gland pores (as shown at *d*).

Length 2 mm.; breadth 1.5 mm.

From carton nests of an ant (*Dolichoderus carbonarius-latisquama*), in association with *Ctenochiton inclusus* (described below) and *Anomalococcus multipori* MORRISON. Kloof van Airpulih (West Coast), 550 m. (1923).

The available material, consisting of two examples only, was not in a condition for very accurate description. The details of the antennae and limbs are difficult to distinguish. It is doubtful if this insect (and several other recently included species) is congeneric with the type of the genus — *C. viridis* MASK.; but there is, at present, no other genus to which it could be referred more justly. From all other reputed species *formicophilus* may be distinguished by the relatively great length of the marginal spines.

Ctenochiton inclusus nov. (fig. 7).

Adult ♀ (*a*) irregularly ovate, narrower in front, flattish. Dorsum with irregularly polygonal thin waxy plates. Antennae (*b*) vestigial; 2-jointed; the basal joint small and ill-defined; the apical joint stout, longer than broad, with several short lateral setae and a group of longer setae on the obliquely depressed apex. Limbs (*c*) completely vestigial, each represented by a single long curved setiform structure springing from an irregular plicate plate. Anal operculum

surrounded by a narrow densely chitinous zone; the valves (*e*) narrow, bluntly pointed at each extremity, the outer margin flatly rounded. Margin of body (*d*) irregularly crenulate, with a series of longish slender setae; the stigmatic areas excised, each with a densely chitinous rim, within which is a group of five stigmatic spines (represented, in the example figured,

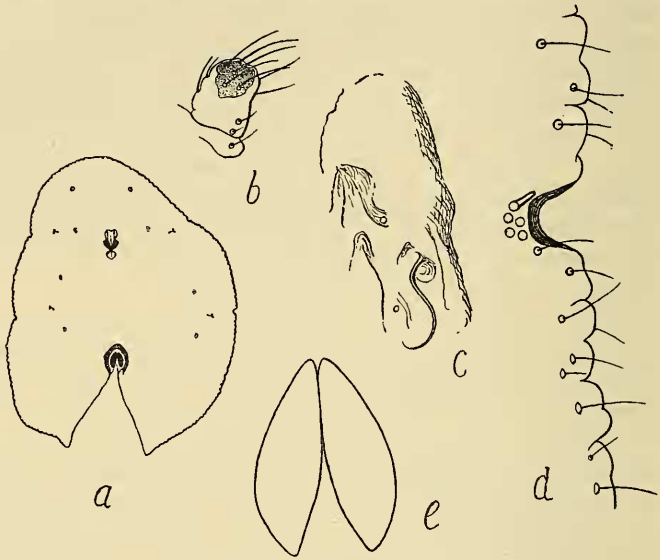

Fig. 7. *Ctenochiton inclusus.*
a Adult ♀, × 18, *b* Antenna, × 450, *c* Rudimentary limb, × 450,
d Lateral margin and stigmatic area, × 450,
e Valves of anal operculum, × 130.

by their basal calyces). Derm membranous, with the exception of a narrow denser marginal zone.

Length 2.25 mm.; breadth 1.75 mm.

Described from a single example. In the carton nest of an ant, in association with *Ctenochiton formicophilus* (described above) and *Anomalococcus multipori* MORRISON. Kloof van Airpulish (West Coast), 550 m. (1923). Further examples may necessitate revision of the foregoing description.

Vinsonia magnifica nov. (fig. 8).

Waxy covering of adult ♀ (*a, b, c*) semitranslucent; pinkish

when fresh; highly convex, the apex usually bluntly pointed, with a small depressed central scar marking the position of the larval exuviae; sides rising steeply from the outwardly turned margin which is produced into bluntly pointed lobes of which there are eight in all, — one projecting from the anterior extremity, two from each side (corresponding to the

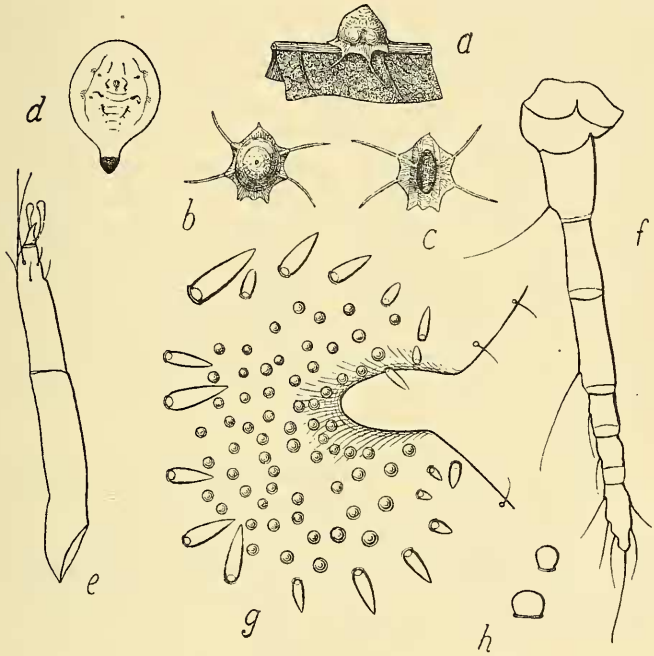

Fig. 8. *Vinsonia magnifica* GREEN.
a Test of adult ♀, side view, nat. size, *b* Test of adult, dorsal view, nat. size, *c* Test of adult, ventral view, nat. size, *d* Denuded ♀, ventral view, × 4, *e* Tibio-tarsal joint of 3rd leg, × 220, *f* Antenna, × 220, *g* Stigmatic tract, × 220, *h* Sub-globular spines of stigmatic tract, viewed in profile, × 450.

stigmatic areas), and three from the posterior extremity; the lateral lobes give rise to four greatly elongated, slender processes of opaque white wax which extend radially outwards to a distance almost equal to the width of the waxy test; a minute dark spot above the posterior extremity marks the position of the anal orifice. Ventral surface usually with a

longitudinal furrow resulting from the position of the insect on the twig or prominent midrib of a leaf. Length of test 9 to 12 mm.; width (excluding the stigmatic processes) 5 to 7 mm.; height 6 to 7 mm.

Adult ♀ insect (*d*), denuded of its waxy covering, ovate, narrowed posteriorly and terminating in a stout caudal process. Derm of old examples sometimes moderately chitinous, but usually membranous, except the apex of the caudal process which is densely chitinized. Antenna (*f*) 7-jointed, the 4th joint longest; 2nd and 4th joints each with a long seta near its distal extremity; similar but shorter setae on the 5th and 6th joints; 7th with a long seta at its apex and several shorter setae on the sides. Legs well developed; the tarsus approximately two thirds the length of the tibia (*e*); ungual digitules strongly dilated, tarsal digitules slender, with a minute knob at the extremity. Stigmatic cleft (*g*) with a semicircular cluster of small sub-globular spines surrounded by a series of larger fusiform spines. Margin of body with small hair-like setae. Length (including caudal process) 4.5 to 5 mm. Width, across thorax, 4 to 4.5 mm.

Other stages not observed.

On the small branches and on the underside of the foliage of *Mangifera odorata* and *Eugenia malaccensis*. Fort de Kock.

Easily distinguished from the only other species of the genus (*Vinsonia stellifera*) by its large size and by the greatly elongated stigmatic processes of the test; also by the structure and armature of the stigmatic tracts.

Aulacaspis sumatrensis nov. (Fig. 9).

Puparium of female irregularly circular; very slightly convex; whitish, opaque; exuviae central, dark brown to blackish. Diameter 2 to 3 mm.

Male puparia white; strongly tricarinate.

Adult ♀ of the form normal to the genus, broadest across the cephalothorax, abruptly narrowed behind the mesothorax; the antepenultimate segment laterally protuberant; cephalothorax and first abdominal segment more densely chitinized than the subsequent segments. Antennal tubercles each with a single stout curved bristle. Both anterior and posterior

spiracles with compact clusters of about 12 parastigmatic pores. Pygidium (fig. 9) with the mesal trullae recessed, slightly divergent, their bases separated, lateral trullae (2 pairs) well developed, duplex, the posterior lobule of each pair larger and inwardly extended; with a large pore-bearing prominence on each side of the mesal pair and between the

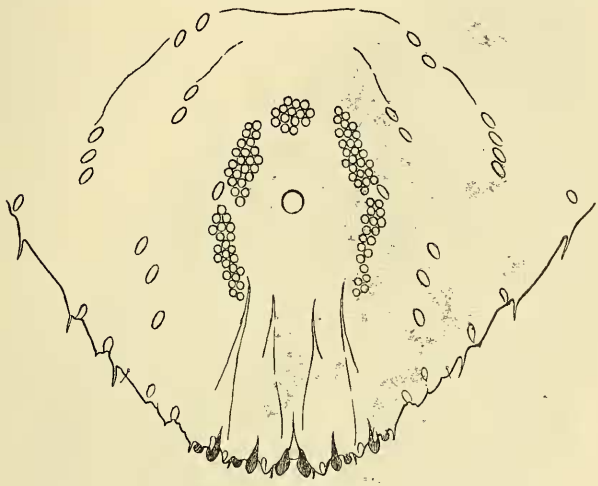

Fig. 9. *Aulacaspis sumatrensis*, pygidium, × 300.

two pairs of lateral trullae; with two small, definitely mucronate marginal prominences on each side beyond the trullae. Glandular spines few and relatively small. Perivulvar pores in five groups, the mesal group averaging 14 pores, upper laterals 22, lower laterals 20. Dorsal pores in four interrupted series, of which two series are on the disc of the pygidium and one on each of the two preceding segments; with a single, isolated pore on each side of the central anal orifice.

Length of adult insect 1 to 1.25 mm. Breadth across cephalothorax 0.7 mm.

On *Mangifera odorata*. Fort de Kock.

Distinguishable from *Aulacaspis cinnamomi-mangiferae* NEWST. in the stouter puparium of the female and the uniformly dark nymphal exuvia; in the distinct separation of the mesal trullae, the fuller development of the lateral

trullae, the mucronate marginal prominences, and the presence of four (instead of three) series of dorsal pores.

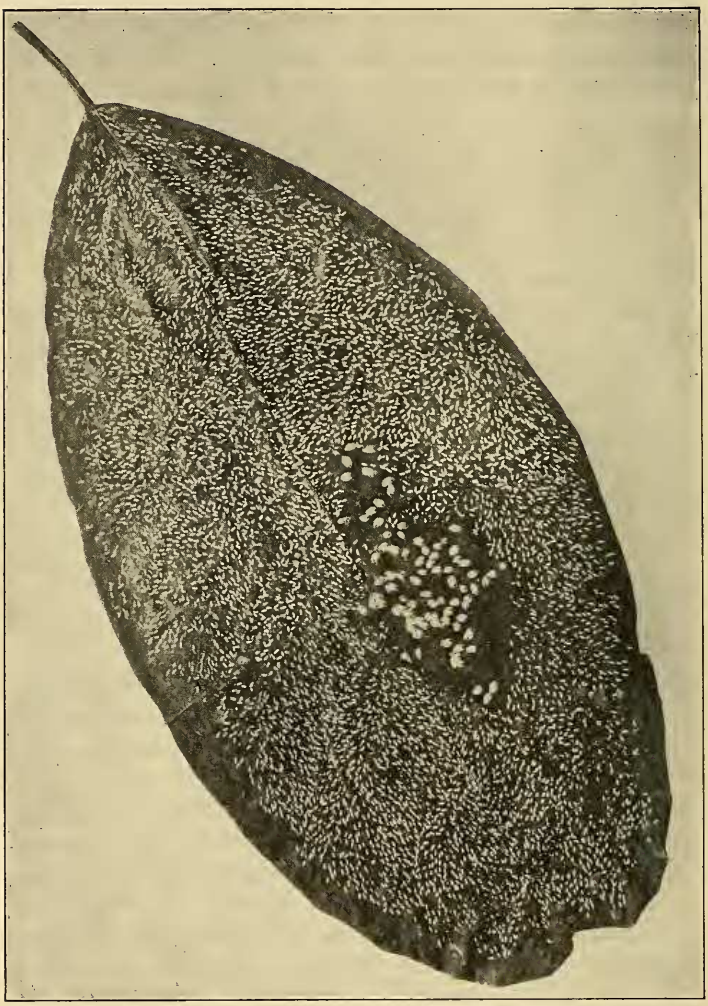

Fig. 10.

Chionaspis vitis.

Leaf of plant, with ♂ and ♀ scales, nat. size.

APPENDIX.

Further notes on the *Coccidae* collected by Mr. E. JACOBSON, in Sumatra.

Since the completion of my earlier paper on the Coccidae of Sumatra I have received, from the same collector, three species that were not included in the earlier collection. These are:

Chionaspis vitis GREEN, *Aspidiotus cyanophylli* SIGN., and *Hemaspidoproctus cinerea* (GREEN). All of them have been adequately described and figured in my "Monograph of the Coccidae of Ceylon"; but the following notes on their habits in Sumatra, supplied by Mr. JACOBSON, may form an appropriate appendix to my original paper.

Chionaspis vitis GREEN. ("Mon. Cocc. Ceylon", II, p. 140, Pl. XXVII).

On undetermined plant. Fort de Kock.

There is nothing remarkable in the occurrence of this species in the present locality. Although it has not actually been recorded from Sumatra, I have examples from Java, and its range extends throughout Southern India and Ceylon, to Formosa. Its host plants include various wild species of *Vitis* (though it has not yet been recorded from the cultivated grape-vine), *Ellipanthus, Grewia, Loranthus, Elaeagnus, Mangifera* and *Mallotus*. But the remarkable arrangement of the scales on these leaves from Sumatra seems to be worthy of notice. It will be observed, from the reproduction (fig. 10) of a photograph of the actual specimen, that the few female scales are isolated in the centre of the leaf, the remaining area being closely occupied by a multitude of male puparia.

Aspidiotus cyanophylli SIGNORET.

Mr. JACOBSON reports that this species is a very troublesome pest in his glass-houses, where the insects attack "all kinds of *Cacti* and other succulent plants (e. g. *Mesembryanthemum*)" and resist such remedial treatments as spraying with alcohol, petroleum, soap emulsions and extract of tobacco, unless these liquids are used in such strong solutions

as to be fatal to the plants also. *Asp. cyanophylli* has a wide distribution, in both hemispheres, and attacks many Orders, Genera and Species of plants. It is a frequent pest in hot-houses in the temperate regions and occurs — in the open — in most tropical countries. The species has been described and figured in the following (amongst other) publications : —

SIGNORET, "Essai sur les Cochenilles", p. (93), Pl. III, fig. 11 ;
COMSTOCK, "2nd Rep. Dep. Ent. Corn. Univ.", p. 59 ;
GREEN, "The Coccidae of Ceylon", I, p. 51, Pl. IX, figs. 1—8;
NEWSTEAD, "Mon. Brit. Cocc.", I, p. 124, Pl. IX, figs. 1—6, Pl. X, fig. 2, Pl. XII, fig. 5.

Hemaspidoproctus cinerea (GREEN).

This fine species, hitherto recorded from India and Ceylon only, was found by Mr. JACOBSON to be infesting branches of *Saraca declinata*, at Fort de Kock, in May 1930. It has been described and figured (under the generic name *Aspidoproctus*) in my "Mon. Cocc. Ceylon", V, p. 450, Pl. CLXXXVIII. MORRISON ("Classification of the Higher Groups and Genera of the Coccid Family *Margarodinae*", U. S. Dep. Agric., Technical Bulletin No. 52, July, 1928) has now referred the species to a distinct genus — *Hemaspidoproctus*.

The following notes of the early stages have been supplied by Mr. JACOBSON : — "The material comprised eggs, very young larvae still under the female carapace, young active larvae, young sessile larvae, and mature female imagines. I think that all the larvae are also females. I could not detect winged males." (The male of this species has not yet been observed, but probably occurs at another season of the year. It would be a comparatively large insect, with fuscous wings having an expanse of over 10 mm. E. E. G.).

Most of the eggs are lemon yellow, some white. The youngest larvae (under the carapace) are light ochraceous, without waxy filaments or tufts. The active larvae have a reddish ochreous hue. On the circumference of the body numerous very fine opalescent filaments stand up in a slanting position. The length of the filaments is about $1\frac{1}{2}$ times the length of the body of the insect."

"The sessile larvae are light ochraceous with a reddish hue. Round the circumference of the body is a fringe of short waxy tufts, arranged in groups of 2 or 3, together with some single tufts. On the back are one median and two lateral rows of short waxy tufts, of a chrome yellow colour. Most individuals of this stage bear on the back, towards the end of the body, a slendar waxy filament of the length of the body, inclined backwards. The older larvae have a reduced number of tufts, of a lighter chrome yellow, and the whole surface is covered with a whitish layer of wax."

"The adult females have a dark brownish surface, looking exactly like the bark of the tree to which they are attached."

"The sessile larvae are found chiefly on the stalks of the smaller ligneous twigs and branches. The individuals on the stalks and leaves never seem to reach maturity, as the attacked leaves invariably die before these individuals are full grown."

"The Coccids are always guarded by numerous ants of the species *Dolichoderus bituberculatus*, and are preyed upon by the caterpillars of a Lycaenid butterfly." (This caterpillar is possibly that of *Spalgis epius*, which attacks various 'mealy bugs' in Ceylon. E. E. G.).